

CLAIMS

1. A method for producing a single crystal by Czochralski method with pulling the single crystal from raw material melt in a crucible heated and melted by a heater, wherein the single crystal occupied by N region over an entire plane in a radial direction is produced with setting an inside diameter of the heater to be 1.26 or more times longer than an inside diameter of the crucible.
2. The method for producing a single crystal according to Claim 1, wherein the single crystal is produced with setting an inside diameter of the heater to be 1.5 or less times longer than an inside diameter of the crucible.
3. The method for producing a single crystal according to Claim 1 or Claim 2, wherein the single crystal is produced so as to contain oxygen at the concentration of 14 ppma or less.
4. The method for producing a single crystal according to any one of Claims 1 - 3, wherein the single crystal is pulled without applying a magnetic field to the raw material melt.

5. The method for producing a single crystal according to any one of Claims 1 - 4, wherein a silicon single crystal is pulled as the single crystal.

6. An apparatus for producing a single crystal by Czochralski method, at least, comprising a crucible for containing raw material melt, a heater surrounding the crucible so as to heat and melt the raw material melt in the crucible, and a pulling means for pulling the single crystal from the raw material melt in the crucible, wherein an inside diameter of the heater is 1.26 or more times longer than an inside diameter of the crucible.

7. The apparatus for producing a single crystal according to Claim 6, wherein an inside diameter of the heater is 1.5 or less times longer than an inside diameter of the crucible.